

March 15, 1955

O. V. JACKSON
DISHWASHING MACHINE

2,704,082

Filed May 16, 1950

4 Sheets-Sheet 1

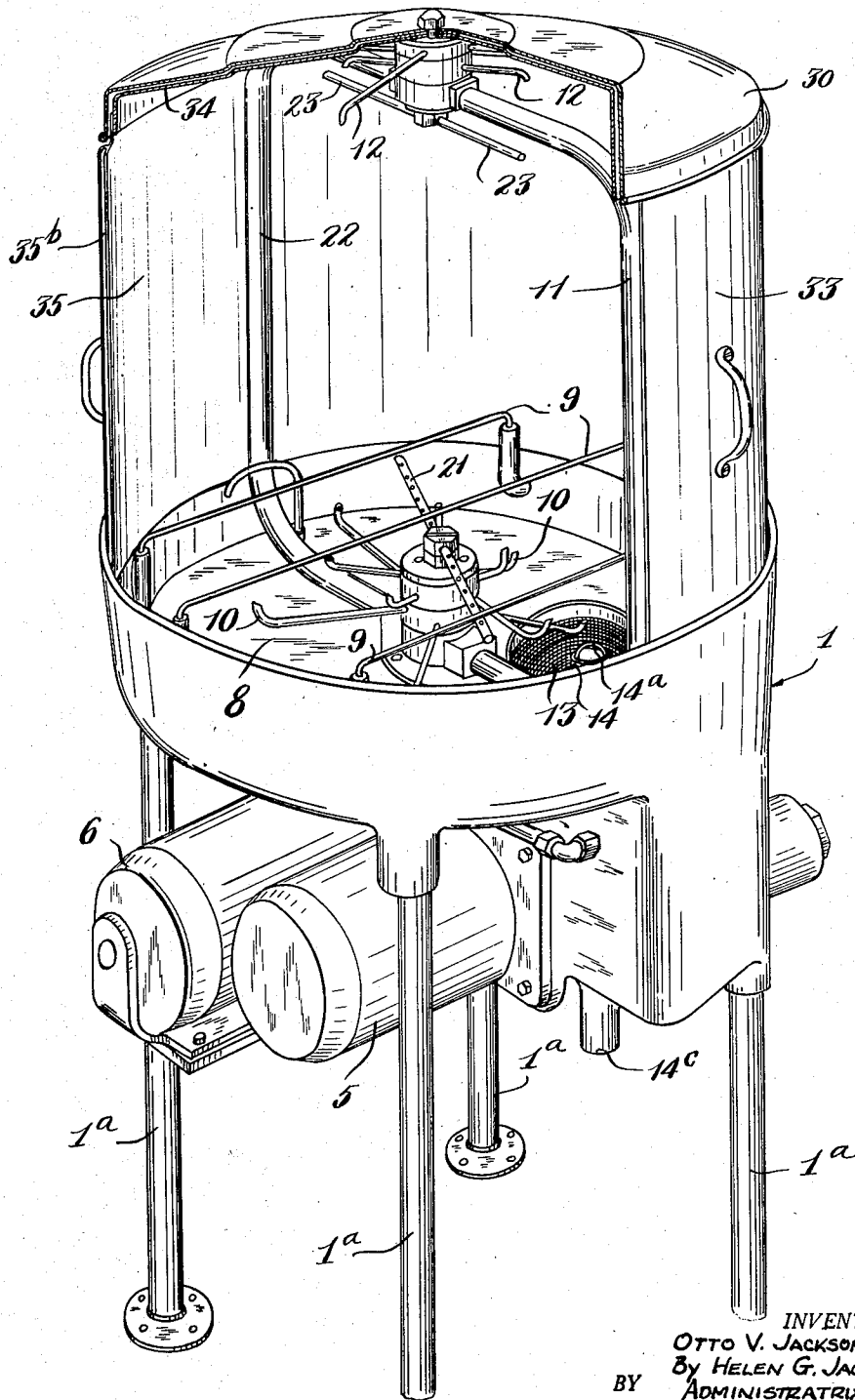


Fig. 1

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4 Sheets-Sheet 2

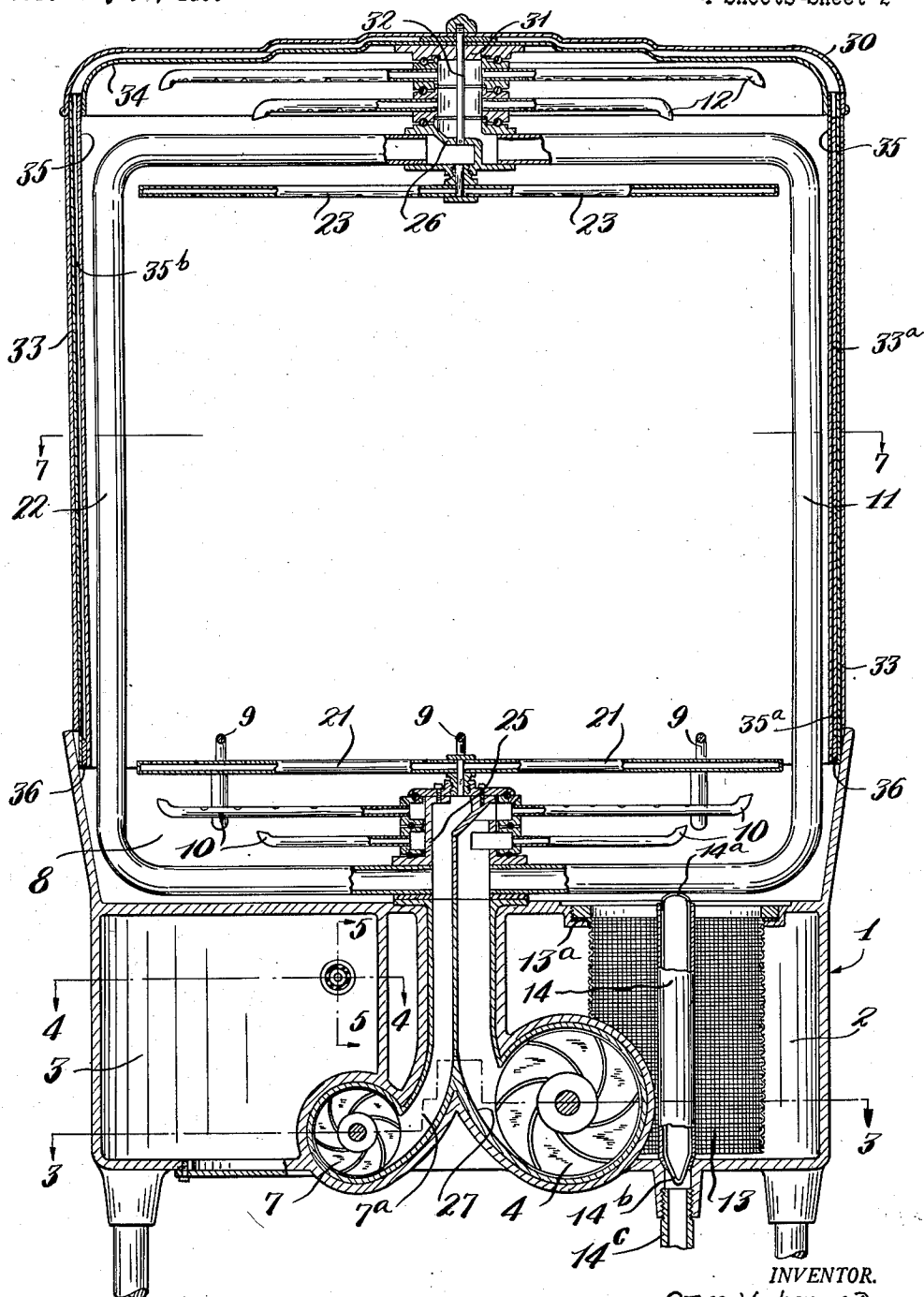


FIG. 2

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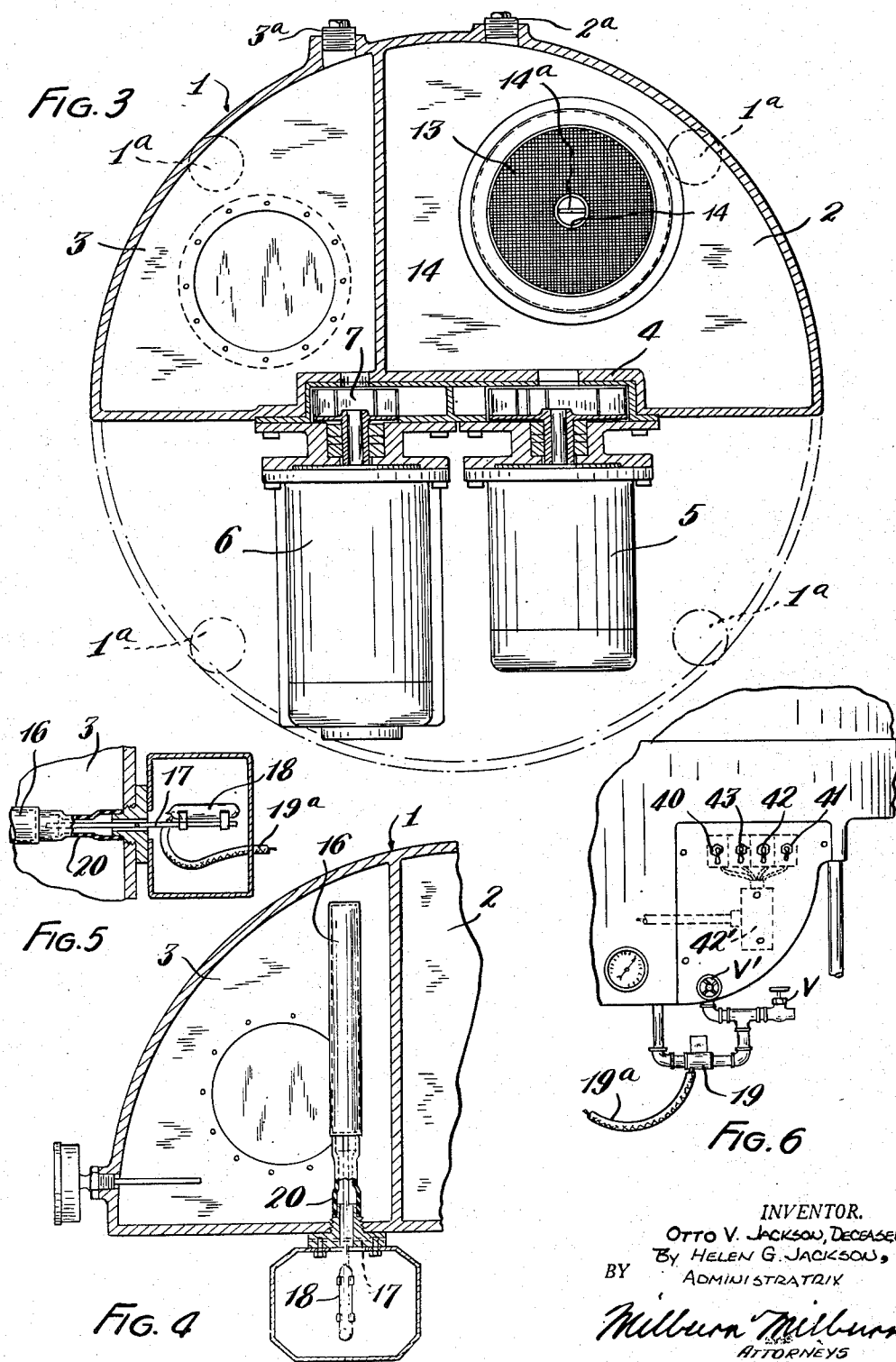
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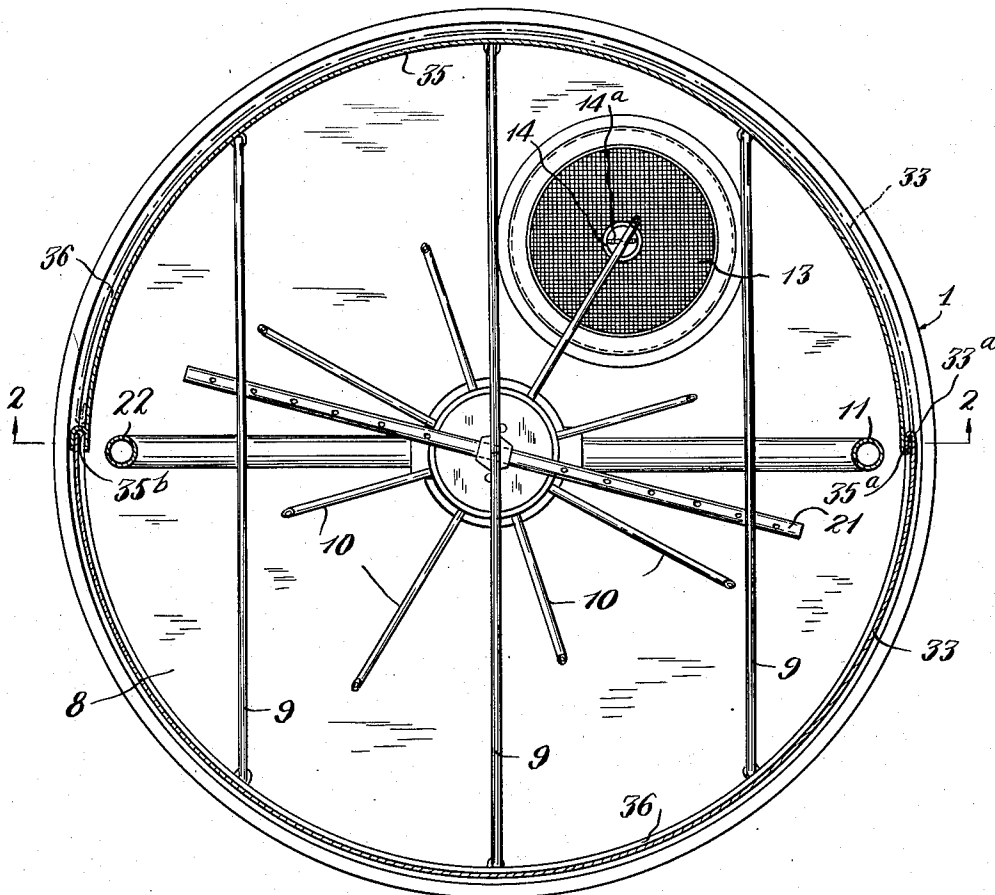


FIG. 7

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2,704,082

DISHWASHING MACHINE

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Application May 16, 1950, Serial No. 162,303

9 Claims. (Cl. 134—95)

This invention is for a dishwashing machine and is related to the companion patent application Serial No. 520,972, filed February 3, 1944, now a patent numbered 2,608,981, dated September 7, 1952, in the name of Otto V. Jackson.

The present improved form of machine comprises a substantially cylindrical washing chamber in the upper part thereof and separate reservoirs and pumps for the washing and rinsing fluids arranged therebelow and within the lateral extent thereof so as to provide a compact as well as efficient form of machine structure. The accomplishment of this advantage constitutes one of the objects of the present invention.

A more specific object of the invention is to provide means for effecting automatically the operation of the separate motors for supplying the washing and rinsing fluids from their reservoirs to the washing chamber in predetermined sequence, with means also for effecting the washing and rinsing operations for as long a period, in each instance, as may be desired according to the conditions at any given time.

Another object is to devise such a machine with improved unitary connections for the means for delivering and distributing the washing and rinsing fluids from their reservoirs to the washing chamber.

Another object is to devise means for utilizing the improved fluid distributor means for supporting an improved form of enclosing cover for the washing chamber and the mechanism directly associated therewith.

Other objects will appear from the following description and claims when considered together with the accompanying drawing.

Fig. 1 is a perspective view of the present improved dishwashing machine with a part thereof broken away in the upper part thereof;

Fig. 2 is a vertical sectional view of the same;

Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 2;

Fig. 6 is an elevation of a portion of the machine and indicates the electric switches for the motors and also the valves in the water-supply line; and

Fig. 7 is a view taken on line 7—7 of Fig. 2.

It is to be understood that the present form of disclosure is merely for the purpose of illustration and that there might be devised various modifications thereof without departing from the spirit of the invention as herein set forth and claimed.

In the present form of machine the single casting 1, which may be mounted upon the legs 1a, encloses the reservoir 2 for the washing fluid and the reservoir 3 for the rinsing fluid and has mounted thereupon the pump 4 and electric motor 5 for the washing fluid and the electric motor 6 and pump 7 for the rinsing fluid. The upper part of the casting 1 has the chamber 8 for receiving the soiled dishes and also the washing and rinsing fluids for the washing operation and the rinsing operation in timed succession. As clearly illustrated in Figs. 1 and 3 of the accompanying drawing, the electric motors 5 and 6 are located to one side of the reservoirs 2 and 3 and beneath and within the lateral extent of the chamber 8 so as to provide a compact arrangement.

A tray of soiled dishes may be supported upon the parallel horizontal rails 9 and may have sliding movement thereupon in suitable wire baskets during the insertion of the same into and their removal from the interior of the chamber 8.

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The pump 4 will force the washing fluid from its reservoir 2 through the perforated spray arms 10 which are rotatably mounted about a vertical axis and are adapted to spray the washing fluid upwardly against the soiled dishes within the chamber 8. The washing fluid is forced also through the pipe 11 and suitable connections to the perforated rotatable spray arms 12 which are located in the upper part of the machine and are adapted to spray the washing fluid down upon the soiled dishes. As the washing fluid falls into the chamber 8, it will flow down through the filter screen 13 which is removably positioned at its upper end within an annular seat 13a and depends within the washing fluid reservoir 2 and is supported at its lower end upon the tapered seat of the drain outlet. Thence the washing fluid, after being filtered through the screen 13, is returned by the pump 4 to the chamber 2 and will be re-circulated over this same course. The drain tube 14 is formed as a unitary part of the assembly which includes the screen 13 and may be extended upwardly to any desired height so as to maintain the desired level of fluid within the chamber 8. The handle 14a of heavy wire permits ready removal and replacement of this combined unit and the downwardly tapered projection 14b of the same heavy wire at the lower end thereof will facilitate the centering of the drain tube within its opening in the bottom of the reservoir 2. The drain pipe 14c is adapted to carry off the waste fluid from the tube 14.

For the purpose of automatically maintaining a predetermined level of the rinsing fluid in the reservoir 3, there has been provided the float 16 therewithin, which is mounted for pivotal movement about the horizontal axis 17 so as to actuate the mercury switch 18 in an electric circuit to an electrically operated valve 19 in the supply line of the rinsing fluid. The electric connection between the switch and the valve 19 is indicated at 19a. In this way the supply of the rinse fluid through the valve 19 to the rinsing fluid reservoir 3 may be automatically opened or closed according to the level of the same therewithin. The flexible boot or housing 20 is attached to the end of the float 16 and encloses the shaft 17 so as to prevent the liquid from interfering therewith and also from escaping, while at the same time there is permitted the operation in the manner intended.

The rinsing fluid will be forced by its pump 7 from the reservoir 3 up through the passage 7a to the rotatable perforated arms 21 in the lower part of the enclosed chamber and also through the upright pipe 22 and suitable distributor connections to the rotatable perforated arms 23 at the top part of the machine. The perforated arms, just referred to, are adapted to be rotated by the force of the washing fluid and the rinsing fluid which will be sprayed thereby upon the dishes for the washing and rinsing operations in a manner that will be readily understood by those who are familiar with the art to which this invention relates.

It is to be observed that there is a unitary form of distributor head at the lower part of the machine and also at the upper part thereof for delivering the washing and rinsing fluids to their respective spray arms. The lower distributor head may be identified by reference numeral 25 and the upper one by reference numeral 26, each of them being formed as a single casting. These castings have also suitable connections for the pipes 11 and 22, as clearly indicated in Fig. 2 of the present drawings.

The housing for the electric pumps 4 and 7 and the passages leading therefrom, which may be in the form of a unitary casting, may be provided with a unitary form of brass lining insert 27.

As will be understood from the above description, the upright pipes 11 and 22 with their horizontal inward extensions at the top thereof, serve as a means of support for the upper distributor head and the spray arms which are rotatably mounted thereupon. The rotatable mountings for the spray arms upon the upper and lower distributor heads, include ring members for supporting the spray arms and ball bearings for these ring members, as clearly indicated in Fig. 2 of the drawings. Upon the top of this upper assembly there is supported the closure by means of the cap 31 and ball bearings therebeneath and the bolt 32 which is anchored in the casting 26 and has

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a nut at its upper end for holding the closure in such assembly. All of the upper and lower spray mechanism and also the upright pipes 11 and 22 are enclosed within the closure means, as clearly indicated in the drawings.

This closure or cover means comprises the overlying top parts 30 and 34, each of full 360 degrees circumferential extent, and their respective depending substantially semi-cylindrical inner and outer portions 33 and 35 affixed thereto. The one vertical edge of the closure portion 33 is formed with an inwardly turned or groove portion 33a which is adapted for locking interengagement with the reversely formed groove 35a upon the corresponding vertical edge of the closure portion 35; while the other vertical edge of the side closure portion 35 has a groove 35b to receive the plain corresponding edge of the side closure portion 33. The bottom edge of the inner closure portion 35 has attached thereto an annular ring 36 about which the corresponding part of the outer closure portion 33 may have engagement as it is moved thereabout. A centrally apertured disk between the top parts 30 and 34 of the closure or cover provides sufficient space therebetween for readily turning of the closure members.

With this arrangement, both of the closure or cover members may be moved about the vertical axis to any desired position; and the one member may be moved about the other so as to provide an opening at any desired point, there being handles provided for facilitating this adjustment, as indicated in Fig. 1 of the drawing. Thus a basket of soiled dishes may be inserted through the open closure at one side of the machine and it is to be noted that such loading position of the closure may correspond with one end of the slide rails 9 which extend in a direction at ninety degrees to the plane of the upright pipes 11 and 22. Then, when the dishes have been washed and rinsed, the closure may be opened at 180 degrees from the loading position so as to remove the basket of cleaned dishes by sliding the same along the rails 9 and out onto the adjoining table. Thus, the soiled dishes may be inserted from one side of the machine and the cleaned dishes may be removed from the diametrically opposite side thereof; and this procedure has proved to be of considerable convenience in the handling of baskets of dishes, especially in the case of a great many dishes.

Upon the installation of the present dishwashing machine, the main water line valve V will be turned on and will be left in such position as long as the machine remains connected for use. Then the washing fluid reservoir 2 will be filled with washing fluid by holding open the valve V' in the water supply line, whereupon it will be closed; but the water supply line to the rinse reservoir 3 will be left open thereto all the time and the level of the rinsing fluid therein will be automatically controlled by the float mechanism above described. It is to be understood that the washing fluid may consist of water and a detergent added thereto while the rinsing fluid may consist of water alone. When a detergent has been added to the water of the washing reservoir, the washing operation may be initiated; and this may be done by placing the detergent in the chamber 8. Now, assuming that the master electric switch 40 has been turned on in the electric supply line, the operator may then actuate the hand switch 41 and hold the same in such effective position until the operation of the timing mechanism has been initiated, this mechanism being indicated in a general way by reference numeral 42'. This timing mechanism will automatically effect the operation of the motors 5 and 6 in properly timed sequence so as to perform the washing and rinsing operations for the desired periods of time and without any further attention by the operator. That is to say, the motor 5 will be operated for approximately sixty seconds for the washing operation and then the motor 5 will be stopped and the motor 6 will be operated for a period of approximately ten seconds for the rinsing operation and then stopped. In case it might be desired to perform the washing and rinsing operations for longer periods of time, this may be done by closing the circuits through the motors 5 and 6, respectively, by means of the manually operated switches 42 and 43 which may be held closed as long as desired according to the length of time it may be necessary to accomplish the washing and rinsing operations in any particular case. The switch 42 for the washing operation may be closed and left closed as long as desired

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whereas the switch 43 for the rinsing operation may be momentarily held closed by the operator and then released according to the judgment of the operator under the circumstances.

The screw plugs 2a and 3a may be readily removed and electric heating elements may be there inserted into the washing and rinsing reservoirs for heating the fluids therein if so desired.

It is believed that the several improvements and the practical advantages resulting therefrom in the present dishwashing machine will be quite obvious to those who are familiar with the art to which this invention relates.

What is claimed is:

1. In combination, a washing machine having a body with an operating chamber in the top part thereof, a substantially bell-shaped cover located over said chamber and comprising top closure means and a plurality of concentrically arranged part-cylindrical members individually adjustable rotatably about the vertical axis of the cover for opening and closing the same, a fluid supply means terminating in spray means above said chamber and having provided thereupon means for supporting said cover entirely by and about said fluid-supply means and said spray means for rotatable adjustment thereof about the vertical axis so as to permit said cover opening to be positioned at different points circumferentially about said chamber.

2. In a washing machine, a washing chamber in the top part thereof, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a substantially bell-shaped cover located over said chamber and comprising top closure means and a plurality of concentrically arranged part-cylindrical members individually adjustable rotatably about the vertical axis of the cover for opening and closing the same, means entirely within said cover for supplying the washing fluid from its reservoir in spray form from above said chamber to the objects therewithin, means entirely within said cover for supplying the rinsing fluid from its reservoir in spray form from above said chamber to the objects therewithin, said means for supplying the washing and rinsing fluids from above said chamber having provided thereupon means for supporting said cover entirely by and about said fluid-supplying means for rotatable adjustment thereof about the vertical axis so as to permit said cover opening to be positioned at different points circumferentially about said chamber.

3. In a washing machine, a washing chamber in the top part thereof, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a substantially bell-shaped cover located over said chamber and comprising top closure means and a plurality of concentrically arranged part-cylindrical members individually adjustable rotatably about the vertical axis of the cover for opening and closing the same, a pipe vertically disposed entirely within one side of said cover for supplying the washing fluid from its reservoir and having spray means for discharging the same from above said chamber to the objects therewithin, a vertically disposed pipe entirely within the diametrically opposite side of said cover with respect to said first-named pipe for supplying rinsing fluid from its reservoir and having spray means for discharging the same from above said chamber to the objects therewithin, said vertically disposed pipes having inwardly extending portions with centrally located means for supporting said spray means and also said cover so as to permit rotatable adjustment of the same for positioning the cover opening at diametrically opposite sides of said chamber.

4. In a washing machine, a washing chamber in the top part thereof, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a substantially bell-shaped cover located over said chamber and comprising top closure means and a plurality of concentrically arranged part-cylindrical members individually adjustable rotatably about the vertical axis of the cover for opening and closing the same, a pipe vertically disposed entirely within one side of said cover for supplying the washing fluid from its reservoir and having spray means for discharging the same from above said chamber to the objects therewithin, a vertically disposed pipe entirely within the opposite side of said cover with respect to said first-named pipe for supplying rinsing fluid from its reservoir and having spray arms for discharging the same from above said

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chamber to the objects therewithin, said vertically disposed pipes having horizontally inwardly extending portions with centrally located unitary means for supporting said spray arms and also said cover so as to permit rotatable adjustment of the same for positioning said cover opening at opposite sides of said chamber.

5. In a washing machine, a washing chamber in the top part thereof, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a substantially bell-shaped cover located over said chamber and comprising top closure means and a plurality of concentrically arranged part-cylindrical members individually adjustable rotatably about the vertical axis of said cover for opening and closing the same, a pipe vertically disposed within one side of said cover for supplying the washing fluid from its reservoir and having spray means for discharging the same from above said chamber to the objects therewithin, a vertically disposed pipe within the diametrically opposite side of said cover with respect to said first-named pipe for supplying rinsing fluid from its reservoir and having spray means for discharging the same from above said chamber to the objects therewithin, said vertically disposed pipes having horizontally inwardly extending portions with unitary centrally located means of connection between said pipes and their individual spray means for supplying the fluids thereto, means for supporting said cover upon said unitary means so as to permit rotatable adjustment of the same for positioning the cover opening at opposite sides of said chamber, and track means extending transversely across the interior of said chamber in a direction substantially normal to the plane of said pipes, whereby the objects may be introduced through said cover opening when positioned at one end of said tracks and slid thereupon for removal from said chamber when said cover opening is positioned at the opposite end of said tracks.

6. In a washing machine, a washing chamber for receiving dishes, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a unitary fluid distributor head located centrally within said chamber and having separate portions for the washing and rinsing fluids, spray arms rotatably and separately mounted upon said head and communicating with their respective portions of said head for supplying fluids to the dishes within said chamber, separate supply means for forcing the fluids from their reservoirs under pressure through the separate portions of said head to the respective spray arms, a unitary fluid distributor head located centrally above said chamber and having separate portions for the washing and rinsing fluids, spray arms rotatably and separately mounted upon said last-named head and having communication with their respective portions of said head for supplying the fluids upon the dishes within said chamber, separate pipes leading from the washing fluid and rinsing fluid supply portions of said lower distributor head to the corresponding portions of said upper distributor head, and a casing enclosing said chamber, fluid distributor heads, pipes, and the spray arms for the washing and rinsing fluids.

7. In a dish-washing machine, a chamber for the dishes to be washed and rinsed, a reservoir for the washing fluid, a separate reservoir for the rinsing fluid, a unitary fluid distributor head located centrally in said chamber and having separate portions for the passage of the washing and rinsing fluids, spray arms rotatably mounted upon said head and communicating with their individual portions of said head for supplying the fluids to the dishes within said chamber, separate motive means for forcing the fluids from their respective reservoirs under pressure through the separate portions of said head to the individual spray arms, a unitary fluid distributor head located centrally above said chamber and having separate portions for the washing and rinsing fluids, sprayer arms

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rotatably mounted upon said last-named head and communicating with their individual portions of said head for supplying the fluids upon the dishes within said chamber, separate vertically disposed pipes leading from the separate portions of said lower distributor head to the corresponding portions of said upper distributor head, said pipes being located diametrically opposite to each other and affording means of support for said upper distributor head and said upper spray arms, a substantially bell-shaped cover rotatably mounted upon said upper distributor head and entirely enclosing said chamber, fluid distributor heads, pipes and spray arms, said cover having means for effecting opening and closing of said cover in a rotatably adjustable manner about the vertical axis of said cover, whereby the rotatable adjustment of said cover will permit the same to be opened and closed at diametrically opposite sides of said chamber and in line with the space between said pipes.

8. In a washing machine, a washing chamber in the top part thereof, means for supplying washing and rinsing fluids thereto, said chamber having a substantially cylindrical cover rotatably adjustable to open and closed positions, a pipe vertically disposed within one side of said cover and connected to said washing fluid supplying means and having spray means for discharging the washing fluid from above said chamber to the objects therewithin, a vertically disposed pipe within the diametrically opposite side of said cover with respect to said first-named pipe and connected to said rinsing fluid supplying means and having spray means for discharging the rinsing fluid from above said chamber to the objects therewithin, said vertically disposed pipes having inwardly extending portions with centrally located means for supporting said spray means and also said cover so as to permit rotatable adjustment of the same for positioning the cover opening at diametrically opposite sides of said chamber.

9. In combination, a washing machine having a body with an operating chamber in the top part thereof, a substantially bell-shaped cover located over said chamber and comprising a plurality of individually rotatably adjustable overlying top members and a part cylindrical member depending from each of said top members, said part cylindrical members being concentrically arranged about the vertical axis of the operating chamber and being individually adjustable with their respective top members about the vertical axis of said chamber for effecting opening and closing of the cover, a fluid supply means terminating in spray means above said chamber and having means for supporting said cover entirely by and about said fluid-supply means and said spray means for rotatable adjustment of said cover about the vertical axis so as to permit said cover opening to be positioned at different points circumferentially about said chamber.

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